TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. M070399P1-99
FOR
ASARCO - HAYDEN CONCENTRATOR

ACRONYMS

Unless otherwise defined, the following acronyms have the listed meanings :

AAC	Arizona Administrative Code
ARS	Arizona Revised Statutes
AZSIP	Arizona State Implementation Plan
CAA	Clean Air Act
CFR	Code of Federal Regulations
HSIP	Hayden PM10 State Implementation Plan
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
PM-10	Particulate Matter with Aerodynamic Diameter < than 10 microns
SIP	State Implementation Plan
SO_x	Sulfur Oxides

Units

BTU/hr	British thermal units per hour
gal	gallons
gm/dscm	grams per dry standard cubic meter
gr/dscf	grains per dry standard cubic feet
lb/hr	pounds per hour
tph	tons per hour
tpy	tons per year

I. INTRODUCTION

American Smelting and Refining Company (ASARCO) operates a metallic mineral concentrating facility in Hayden, AZ. This plant concentrates copper containing ore prior to a smelting operation. Copper ore is excavated from the ground at the Ray mine in Arizona, and following primary crushing, is transported to the Hayden Concentrator. At the Hayden Concentrator, the ore is passed through secondary and tertiary crushing processes where it is further reduced in size. Following the crushing processes, the ore is transported via conveyor belts to a fine ore storage bin. From the fine ore storage bin, the ore is transported to ball mills and rod mills where the ore is reduced further in size , and converted to a slurry. After the grinding operations, the ore slurry is directed to froth flotation tanks where the copper metal is separated from the bulk of the copper ore. The copper rich ore, which contains about 20% copper metal is sent off to a smelting operation. The slag from the froth flotation process is pumped off to tailings dams.

A. Company Information

Facility Name:	American Smelting and Refining Company (ASARCO)
Mailing Address:	P.O. Box 8, Hayden, AZ
Facility Address:	Hayden & Kennecott Avenues, Hayden, Gila County, AZ

B. Attainment Classification

The Hayden area has been designated as non-attainment for Particulate Matter < 10 micron aerodynamic diameter (PM10) and Sulfur Dioxide (SO_2).

II. PROCESS DESCRIPTION

Ore Receiving

The Hayden Concentrator secondary crushing facility receives on a daily basis 30,000 tons of copper containing Sulfide Ore (slag, and by-product copper containing materials are also input and added to the sulfide ore). The ore is delivered to the concentrator via rail. Delivery consists of seven trains per day, each train containing 4286 tons of ore on an average. Slag and other copper bearing materials are delivered by truck to the Track Hopper. Sulfide Ore is initially crushed at the Ray Operations, which is at a physically separate location. Upon arriving at the Hayden Concentrator the ore is dumped at the Track Hopper where it is conveyed to the Crushing Building via underground conveyor belts.

The ore receiving location is a source of emissions of particulate matter. The dumping of the ore results in the separation of some particulate matter from the bulk surface, and its consequent transport to the atmosphere. To minimize these fugitive emissions, spray bars have been installed at the ore dumping location. Wetting the ore results in suppression of particulate emissions. In addition, the Track Hopper ventilation is ducted to a Ducon Dynamic scrubber.

Secondary and Tertiary Crushing

In the Crusher Building, the ore first goes through the Secondary Crushing process. In this process the ore is crushed down to 4" sized pieces. From there the ore passes through the Tertiary Crushing process, where the ore is reduced to 0.5" to 0.75" size particles. Screens are used to size the material, and large particles (0.25" - 10 mesh) are sent back through the system to be recrushed. Conveyor belts are used to transport the material to the various locations inside the Crusher Building. While re-circulating the larger particles, the conveyor belt loop passes outside the Crusher Building and re-enters it. The sections external to the Crusher Building are covered. In addition, this external section of the loop also has a location where material is transferred between conveyor belts. This location is partially enclosed by the Transfer House. Small particles (200 mesh) are the required output of the crusher circuits, and are conveyed via a covered beltline to the Fine Ore Bins Building.

The emission points inside the Crusher Building include (i) Vibrating Feeders, (ii) Screens, (iii) Crushers, (iv) Conveyors, and (v) Conveyor Transfer Points. Each of these locations is a source of particulate emissions. The Crusher Building is controlled by five scrubbers - two scrubbers are of the Rotoclone type, and three scrubbers are of the Ducon Dynamic type. The Transfer House ventilation is ducted to a Ducon Dynamic scrubber.

The Fine Ore Bins Building serves as a storage area for the 200 mesh particles. The storage pile is covered by a roof, and contains metal walls on two sides. The other two sides are covered by plastic flaps. The conveyor belt which transports the material from the Crusher Building, drops the material onto this enclosed storage pile. This dropping event is the principal source of particulate emissions within the Fine Ore Building. The emissions from the Fine Ore Building are controlled by four scrubbers - three of which are Rotoclone scrubbers, and one a Ducon Dynamic scrubber.

Grinding and Froth Flotation

From the Fine Ore Bin, the ore is conveyed through grinding mills. The first grinding circuit is the Rod Mills. The Rod Mills are metal, cylindrical units placed on trunyons to allow rotation. The Rod Mills are charged with metal rods, and ore is placed inside these mills along with water chemical reagents, and milk of lime. This grinding reduces the size of the ore to less than one tenth of an inch. The resulting mixture is a slurry which is transported to the next step in the grinding circuit - the Ball Mills. The Ball Mills are charged with metal balls. The tumbling action of the mill grinds the ore particles to the size of a very fine sand (70% passing through 10 mesh). As the slurry leaves the Ball Mills it passes through a sizing device called a cyclone. All oversized particles are returned to the Ball Mills for further grinding.

The slurry containing the fine particles that successfully pass through the cyclone is pumped to the flotation area. The reagents added to the grinding process prepare the slurry for the flotation process. Flotation Cells are agitated to keep the slurry in suspension. Air is injected into the cells in the form of tiny bubbles. A collector is added to the slurry to cause the surface of the copper bearing mineral particles to stick to any air bubble they touch. Particles rise through the slurry and collect as a layer of foam on the surface (froth). A frother reagent is added to give the bubble a tough surface. The froth that is skimmed from the top of the cells is the copper bearing “concentrate”. The concentrate is sent as a slurry to the filter plant where the water is vacuumed out, leaving behind a filter cake. The filter cake is belted to the concentrate storage area where it is allowed to dry before shipment to the Hayden Smelter.

As is evident from the previous paragraphs, the Grinding and Froth Flotation processes are wet processes, and

do not cause emissions of particulate matter into the atmosphere.

Tailings

Material not affected by the reagent (did not come off as froth) is called "tailings". Tailings slurry is pumped into thickeners from the Flotation Cells. After the thickening process is completed, the slurry is pumped by pipeline to the appropriate tailings impoundment. There are two tailings impoundments, south and north of the Gila River. The impoundment located north of the river is referred to as AB/BC tailings pond. A middle dyke splits the pond in half, west of the dike is BC and east of the dike is AB. The impoundment south of the Gila River is D tailings pond. Water from the tailings impoundments is pumped to the Reclaim Water Pond, located east of the AB pond.

The tailings when dry are in the form of a fine sand, and there is great potential for these fine particles to be entrained by passing gusts of wind. Therefore, the tailings piles can contribute to air pollution through fugitive emissions of particulate matter. Particulate emissions are minimized through the use of control mechanisms such as revegetation of the tailings piles, hydroseeding, or chemical stabilization.

III. EMISSIONS

The ASARCO Hayden Concentrator has the potential to emit greater than 100 tons per year of particulate matter. It is a "major" source pursuant to Sec 501(2) of the Clean Air Act. Table III.1 summarizes emissions from the principal sources of air pollution at the facility.

TABLE III.1 : Summary of Emissions Information

Unit	*Pollutant*	*Allowable Emissions*	*Calculated Emissions*	*Test*
Track Hopper (TH); Reciprocating Plate Feeders (PF1 through 6) **(Wet Scrubber #7 Stack)**	PM	14.86 lb/hr (65 tpy) [HSIP 7.1.4.1] 84.0 lb/hr (368 tpy) [AAC R18-2-721(B)(2) at 1625 TPH]	854 tpy (uncontrolled) [AP-42 Table 11.24-2, material handling] 65 tpy (92% control) 368 tpy (57% control) 43 tpy (95% control)	1.8 lb/hr (7.8 tpy) [1990 Test Results]
#2 Conveyor Belt (#2C); #3 Conveyor Belt (#3C); #6 Conveyor Belt (#6C); #8 Conveyor Belt (#8C); #9 Conveyor Belt (#9C); #10 Conveyor Belt (#10C) **(Wet Scrubber #3 Stack)**	PM	14.62 lb/hr (65 tpy) [HSIP 7.1.4.1] 84.0 lb/hr (368 tpy) [AAC R18-2-721(B)(2) at 1625 TPH]	854 tpy (uncontrolled) [AP-42 Table 11.24-2, material handling] 65 tpy (92% control) 368 tpy (57% control) 43 tpy (95% control)	1.1 lb/hr (4.8 tpy) [1996 Test Results]
SECONDARY CRUSHER CIRCUIT Three Crusher Screens, Allis Low Head, 1995, (SS1, SS2, SS3); 48" Belt Feeders 1 through 3, (BF1, BF2, BF3); Three Cone Crushers, Symons-Nordberg, 1260 tph, 1958, (SC1, SC2, SC3) **(Wet Scrubber #4 Stack)**	PM	6.5 lb/hr (28 tpy) [40 CFR 60.382(a)(1)]	8540 tpy (uncontrolled) [AP-42 Table 11.24-2, secondary crushing] 43 tpy (95% control) 28 tpy (99.67% control)	1.7 lb/hr (7.4 tpy) [1996 Test Results]

Unit	*Pollutant*	*Allowable Emissions*	*Calculated Emissions*	*Test*
TERTIARY CRUSHER CIRCUIT Three Crusher Screens, Allis Low Head, 1995, (SS1, SS2, SS3); 48" Belt Feeders 1 through 3, (BF1, BF2, BF3); Three Cone Crushers, Symons-Nordberg, 1260 tph, 1958, (SC1, SC2, SC3) **(Wet Scrubber #1, 2, and 5 Stacks)**	PM	6.5 lb/hr (28 tpy) from each stack [40 CFR 60.382(a)(1)]	19217 tpy (uncontrolled) [AP-42 Table 11.24-2, tertiary crushing] 961 tpy (95% control) 84 tpy (99.56% control for each scrubber)	2.3 lb/hr (9.9 tpy) 1.6 lb/hr (7.1 tpy) 0.5 lb/hr (2.3tpy) [1998 Tests]
Transfer House **(Wet Scrubber #6 Stack)**	PM	6.1 lb/hr (26.8 tpy) [HSIP 7.1.4.1] 84.0 lb/hr (368 tpy) [AAC R18-2-721(B)(2) at 1625 TPH]	854 tpy (uncontrolled) [AP-42 Table 11.24-2, material handling] 27 tpy (97% control) 368 tpy (57% control) 43 tpy (95% control)	1.1 lb/hr (4.8 tpy) [1990 Test]
Fine Ore Bin **(Scrubbers #SO, #CE, #NO)**	PM	6.0 lb/hr (26 tpy), 8.9 (39) tpy, 6.7 (29 tpy) [HSIP 7.1.4.1] 84.0 lb/hr (368 tpy) [AAC R18-2-721(B)(2) at 1625 TPH]	854 tpy (uncontrolled) [AP-42 Table 11.24-2, material handling] 105.8 tpy (88 % control each) 379.8 tpy (55.5 % control each) 43 tpy (95% control each)	No Tests Performed
Fine Ore Bin **(Scrubber #NW**)	PM	2.7 lb/hr (11.8 tpy) [40 CFR 60.382(a)(1)]		1.2 lb/hr (5.2 tpy) [1991 Test]
Lime Silo **(Baghouse)**	PM	2.2 lb/hr (2 tpy @ 1820 hrs/yr) [HSIP 7.1.4.1]	-	No Tests Performed

IV. COMPLIANCE HISTORY

A. Inspections

TABLE IV.A.1 : Inspection Results

Inspection Date (Number)	Type of Inspection	Results
3/23/98 (19214)	Performance Test on Scrubbers 1,2, and 5	No violations
6/23/98 (19807)	Unannounced Annual Inspection	No violations

Inspection Date (Number)	Type of Inspection	Results
4/9/98 (19242)	Level One, Observation of Performance Test on #5 Scrubber	No Violations
2/13/97 (17151)	Level Two, Unannounced Annual Inspection	No Violations
4/13/96 (15366)	Level Three, Observation of Performance Tests on Ducon Scrubbers	No Violations
12/5/95 (14283)	Unannounced Annual Inspection	Notice of Violation issued for conducting Ore Unloading Operations without operating Spray Bars
10/17/95 (14012)	Performance Test	No Violations
8/9/94 (109490)	Unannounced Periodic Inspection	Notice of Violation Recommended
8/6/91 (8610)	Observation of Performance Tests on Scrubbers	No Violations
3/91, 5/91	Inspection	NOV issued for non-compliance w/ OP #0362-93 and AAC R18-2-408&410. Mineral tailings piles not maintained in accordance w/ requirements.

B. Testing

Table IV.B.1 : Performance Tests

Date of Test	Equipment Tested	Pollutants Tested	Results
8/91 (OP #0362-93)	Rotoclone #3	PM	Pass (0.026 gr/dscf vs. 0.05 gr/dscf)
	Rotoclone #4	PM	Pass (0.015 gr/dscf vs. 0.05 gr/dscf)
	Ducon #5	PM	Pass (0.007 gr/dscf vs. 0.022 gr/dscf)
	NW Fine Ore Ducon	PM	Pass (0.005 gr/dscf vs. 0.022 gr/dscf)
10/17/95 (OP #0362-93)	Rotoclone #4	PM	Fail (0.103 gm/dscm vs. 0.05 gm/dscm)

Date of Test	Equipment Tested	Pollutants Tested	Results
5/96	Scrubber #3 at Secondary Crusher	PM	Pass (0.006 gms/dscm vs. 0.05 gms/dscm)
	Scrubber # 4 at Secondary Crusher	PM	Pass (0.009 gms/dscm vs. 0.05 gms/dscm)
3/98, 4/98	Scrubber #1 at Secondary Crusher	PM	Pass (0.0077 gr/dscf vs. 0.05 gr/dscf)
	Scrubber #2 at Secondary Crusher	PM	Pass (0.0055 gr/dscf vs. 0.05 gr/dscf)
	Scrubber #5 at Secondary Crusher	PM	Pass (0.026 gr/dscf vs. 0.05 gr/dscf)
	Scrubber #5 at Secondary Crusher	PM (Retest)	Pass (0.0018 gr/dscf vs. 0.05 gr/dscf)
11/3-6, 18/1998	Scrubber # 1	PM	Pass (0.009 gr/dscf vs 0.05 gr/dscf)
	Scrubber # 2	PM	Pass (0.008 gr/dscf vs 0.05 gr/dscf)
	Scrubber # 4	PM	Pass (0.002 gr/dscf vs 0.05 gr/dscf)
	Scrubber # NW	PM	Pass (0.001 gr/dscf vs 0.05 gr/dscf)

V. APPLICABLE REGULATIONS VERIFICATION

The Permittee has identified the applicable regulations that apply to each unit in the permit application. Table V.1 summarizes the findings of the Department with respect to applicability or non-applicability of regulations that apply to each unit. Installation Permit conditions and other previous permit conditions are discussed under Section VI of this technical review document.

TABLE V.1 : Applicable regulations verification

Unit	Control	Applicable Regulations‡	Verification
Track Hopper (TH); Reciprocating Plate Feeders (PF1 through 6)	Water Sprays; Wet Scrubber #7 Stack (WS7)	*Federally Enforceable Regulations* AZSIP R9-3-521(A)(4) [$E = 17.31P^{0.16}$] A.A.C. R18-2-702(B) [Opacity < 40%] *State Enforceable Regulation* A.A.C. R18-2-721(B)(2) [$E = 55P^{0.11}$-40] Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)] Hayden PM10 SIP work practice requirements	The Track Hopper and Reciprocating Feeders were manufactured before 1982. Wet Scrubber #7 controls emissions from the Track Hopper and the Reciprocating Plate Feeders. The stack is subject to regulations under the AZSIP, Article 7, and HSIP. The AZSIP standard is more stringent than the Article 7 standard. The HSIP standard is numerically the most stringent, however since the HSIP is yet to be approved by the EPA it is state enforceable only at the current instance. Therefore, from an enforceability perspective, the AZSIP particulate standard is more stringent.
#2 Conveyor Belt (#2C); #3 Conveyor Belt (#3C); #6 Conveyor Belt (#6C); #8 Conveyor Belt (#8C); #9 Conveyor Belt (#9C); #10 Conveyor Belt (#10C)	Wet Scrubber #3 Stack, (WS3); Dust Hoods	*Federally Enforceable Regulations* AZSIP R9-3-521(A)(4) [$E = 17.31P^{0.16}$] A.A.C. R18-2-702(B) [Opacity < 40%] *State Enforceable Regulation* A.A.C. R18-2-721(B)(2) [$E = 55P^{0.11}$-40] Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)] Hayden PM10 SIP work practice requirements	Particulate emissions from drop points associated with #2C, #3C, #6C, #8C, #9C, and #10C are ducted through Wet Scrubber #3. All of these conveyors were manufactured prior to 1982. The stack is subject to regulations under the AZSIP, Article 7, and HSIP. The AZSIP standard is more stringent than the Article 7 standard. The HSIP standard is numerically the most stringent, however since the HSIP is yet to be approved by the EPA it is state enforceable only at the current instance. Therefore, from an enforceability perspective, the AZSIP particulate standard is more stringent.

Unit	Control	Applicable Regulations‡	Verification
SECONDARY CRUSHER CIRCUIT Three Crusher Screens, Allis Low Head, 1995, (SS1, SS2, SS3); 48" Belt Feeders 1 through 3, (BF1, BF2, BF3); Three Cone Crushers, Symons-Nordberg, 1260 tph, 1958, (SC1, SC2, SC3)	Wet Scrubber #4 Stack, (WS4); Dust Hoods	*Federally Enforceable Regulations* 40 CFR 60.382(a)(1) [exit PM conc. <= 0.05 gm/dscm] 40 CFR 60.382(b) [Fug. Emm. <= 10% Opacity] *State Enforceable Regulation* Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)] Hayden PM10 SIP work practice requirements	Particulate emissions from BF1, BF2, BF3, SS1, SS2, SS3, SC1, SC2, SC3, #2C, and #6C are ducted through Wet Scrubber #4. The three screens are NSPS affected units. The rest of the units have been in operation from before 1982. The NSPS standard is more stringent than the Article 7 standard. Therefore, Wet Scrubber #4 stack is subject to NSPS standards. In addition to the NSPS standard, this stack is also subject to a Hayden PM10 SIP standard. This standard is numerically less stringent than the NSPS standard. The Hayden standard is less stringent than the NSPS standard from the enforceability perspective also.
TERTIARY CRUSHER CIRCUIT Six Vibrating Screens, Allis Low Head, 1997, (TS1, TS2, TS3, TS4, TS5, TS6); Six Cone Crushers, Symons-Nordberg, 1260 tph, 1958, (TC1, TC2, TC3, TC4, TC5, TC6); Tertiary Feed Bin (TFB); Six 15 HP Belt Feeders (TBF1-6)	Wet Scrubbers #s 1, 2, and 5 Stacks, (WS1, WS2, WS5); Dust Hoods	*Federally Enforceable Regulations* 40 CFR 60.382(a)(1) [exit PM conc. <= 0.05 gm/dscm] 40 CFR 60.382(b) [Fug. Emm. <= 10% Opacity] *State Enforceable Regulation* Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)] Hayden PM10 SIP work practice requirements	Particulate emissions from #5C, TFB, TBF 1 through TBF6, TS1 through TS6, TC1 through TC6, and #7C are controlled by Wet Scrubbers #1, #2, and #5. The six screens are NSPS affected units. The rest of the units have been in operation from before 1982. The NSPS standard is more stringent than the Article 7 standard. Therefore, Wet Scrubbers #1, #2, and #5 stacks are subject to NSPS standards. In addition to the NSPS standard, these stacks are also subject to a Hayden PM10 SIP standard. This standard is numerically less stringent than the NSPS standard. The Hayden standard is less stringent than the NSPS standard from the enforceability perspective also.

Unit	Control	Applicable Regulations‡	Verification
Transfer House (TFRH)	Wet Scrubber #6 Stack, (WS6); Dust Hoods	*Federally Enforceable Regulation*s AZSIP R9-3-521(A)(4) [$E = 17.31P^{0.16}$] A.A.C. R18-2-702(B) [Opacity < 40%] *State Enforceable Regulation*s A.A.C. R18-2-721(B)(2) [$E = 55P^{0.11}$-40] Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)] Hayden PM10 SIP work practice requirements	The Transfer House partially encloses two drop points (#3C to #4C and #4C to #5C). Wet Scrubber #6 controls emissions from the Transfer House. The stack is subject to regulations under the AZSIP, Article 7, and HSIP. The AZSIP standard is more stringent than the Article 7 standard. The HSIP standard is numerically the most stringent, however since the HSIP is yet to be approved by the EPA it is state enforceable only at the current instance. Therefore, from an enforceability perspective, the AZSIP particulate standard is more stringent. One of the fugitive dust control measures proposed in the Hayden PM10 SIP was a weekly water washdown of the transfer house floor.
Fine Ore Bin (FOB)	Fine Ore Bin Scrubbers #SO, #CE, #NO	*Federally Enforceable Regulation*s AZSIP R9-3-521(A)(4) [$E = 17.31P^{0.16}$] A.A.C. R18-2-702(B) [Opacity < 40%] *State Enforceable Regulation*s A.A.C. R18-2-721(B)(2) [$E = 55P^{0.11}$-40] Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)]	Particulate emissions from the Fine Ore Bin are ducted through four scrubbers. Scrubbers #SO, #CE, #NO control emissions from storage areas constructed prior to 1982. A new storage area constructed in 1990 is controlled by Scrubber #NW. This stack is subject to NSPS standards.

Unit	Control	Applicable Regulations‡	Verification
	Fine Ore Bin Scrubber #NW	*Federally Enforceable Regulations* 40 CFR 60.382(a)(1) [exit PM conc. <= 0.05 gm/dscm] *State Enforceable Regulation* Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)]	
Lime Silo (LS)	Baghouse (LSB)	*Federally Enforceable Regulation*s AZSIP R9-3-502(A)(2) [$E = 17.31P^{0.16}$] A.A.C. R18-2-702(B) [Opacity < 40%] *State Enforceable Regulation*s A.A.C. R18-2-730(A)(1)(b) [$E = 55P^{0.11}$-40] Hayden PM10 SIP Section 7.1.4.1 [exit PM conc. <= 0.115 gm/dscm (0.05 gr/dscf)]	The Lime Silo has no standards in Article 7 or Article 9. Therefore, A.A.C. R18-2-730(A) is applicable. A.A.C. R18-2-702(B) is applicable to all existing sources that are not otherwise regulated by an opacity standard. The HSIP standard is numerically the most stringent, however since the HSIP is yet to be approved by the EPA it is state enforceable only at the current instance. Therefore, from an enforceability perspective, the AZSIP particulate standard is more stringent.
Tailings Dams; Unpaved Roads; Open Areas	Reasonable Precautions	A.A.C. R18-2-604 A.A.C. R18-2-605 A.A.C. R18-2-608 A.A.C. R18-2-610 [Opacity < 40%] Hayden PM10 SIP work practice requirements	Article 6 standards are applicable to non-point sources.

‡ : In addition to the requirements already listed, emission units at the Hayden Concentrator are also subject to requirements from the Pinal-Gila State Implementation Plan (PGSIP). All of these restrictions have equivalent rules in the Arizona State Implementation Plan (AZSIP). The following table provides a comparison of the various PGSIP rules that have been streamlined :

PGSIP	AZSIP
7-3-1.1 (Visible Emissions - General)	R9-3-501 (Visible Emissions - General)
7-3-1.2 (Fugitive Dust)	R9-3-404, -405, -406 (Open Areas, Roadways, Material handling)
7-3-1.8 (Process Industries)	R18-2-521(A) (Standards for Existing Nonferrous Metals Industry Sources)

VI. PREVIOUS PERMITS AND CONDITIONS

A. Previous Permits

Table VI.A below lists all the permits that have been issued to the source thus far.

Table VI.A : Previous Permits

Permit Number	Date Issued	Application Basis
0321-85	8/1/84	Operating Permit
0341-86	12/2/85	Operating Permit
0362-93	3/13/90	Operating Permit
1210	1/14/92	Installation Permit
1000228	12/11/95	Minor revision to OP #0362-93
Changes pursuant to AAC R18-2-317	12/19/95 - 12/22/95	Replacement of #s 3 and 4 Rotoclone Scrubbers w/ Dynascrub Scrubbers
1000721	11/6/98	Minor revision to OP #0362-93

B. Previous Permit Conditions

Table VI.B cross references the previous permit conditions with their location in the proposed Title V permit. Brief discussions provide reasons for apparent reductions in stringency. Copies of permit #s 0321-85, 0341-86, 0362-93, 1210, 1000228, and 1000721 are attached to this document for reference.

TABLE VI.B : Previous permits

Permits 0321-85 and 0341-86 were annual operating permits containing generic requirements. Specific requirements on water truck operation and tailings controls have been superseded by more stringent conditions in subsequent permits						
OP #0362-93, References	**Determination**				**#M070399P1-99 References**	**Remarks**
	Delete	**Keep**	**Revise**	**Streamline**		
1		✓			III(G)(4)	-
2	✓				-	This is a redundant condition. Permittee is required to obtain a revision before making changes at the facility

3	✓				-	The Permittee has replaced the scrubbers
OP #0362-93, References	**Determination**				**#M070399P1-99 References**	**Remarks**
	Delete	**Keep**	**Revise**	**Streamline**		
4			✓		I(A)(b), V(A)(b)	There is a typographical error in this condition. The concentration limit was written as 0.05 **grams per dry standard cubic meter**. The standard recommended in the HSIP was 0.05 **grains per dry standard cubic foot** (or 0.115 grams/dscm). This error has been corrected in the Title V permit. The tests have been completed. In addition, some of the stacks have since become subject to the more stringent NSPS standard.
5		✓			III(G)(1), III(B)(6)	-
6		✓			III(A), III(B), III(C), III(D)	-
7		✓			III(E), III(F)	-
8		✓			III(E)	-
9	✓				-	This is a redundant condition. Permittee is required to obtain a revision before making changes at the facility
10		✓			III(G)(2)	-
11		✓			III(G)(3)	-
12	✓				-	The authority for all the conditions in the operating permit resides in the HSIP.
13	✓					This is a redundant permit condition. Various rules in AAC provide this authority.

14	✓					There is no basis for establishing limits on mass emission rates. The HSIP provides the authority for concentration limits, and these have been carried over into the Title V permit.
15				✓	VII(A)(1)	-

#1210 References	Determination				#M070399P1-99 References	Remarks
	Delete	Keep	Revise	Streamline		
I	✓				-	The scrubbers have been installed
II(A)			✓		I(A)(1)(b), II(A)(1)	In the years following the issuance of this permit, some scrubbers have triggered NSPS requirements for these "new" scrubbers, the more stringent NSPS standard has been specified.
II(B)		✓			I(A)(2), II(A)(2)	-
II(C)	✓				-	There is no basis for establishing limits on mass emission rates. The HSIP provides the authority for concentration limits, and these have been carried over into the Title V permit.
III					Att. A, XVII	-

#1000228 References	Determination				#M070399P1-99 References	Remarks
	Delete	Keep	Revise	Streamline		
I				✓	Att. A, II	-
II(A)				✓	II(B)	Emissions from SS1, SS2, SS3 are ducted through WS4
II(B), II(C)		✓			II(A)	-

III(A)	✓				-	The performance test has been completed
III(B)	✓				-	This is a redundant condition. Director's authority is provided through rules in the AAC. This permit condition does not serve any purpose
IV	✓				-	The required performance tests have been completed. The Title V permit requires other tests for periodic monitoring purposes, and the test methods are specified accordingly
V, VI		✓			II(C)	-

#1000721 References	Determination				#M070399P1-99 References	Remarks
	Delete	Keep	Revise	Streamline		
I				✓	misc.	This identification is made in appropriate parts of the title V permit
II(A)		✓			II(A)(1)	-
II(B)		✓			II(A)(2)(b)	-
III				✓	II(B)	-
IV(A,B)				✓	II(C)	-
IV(C)				✓	Att. A, Sec XVII	-
V(A)	✓				-	Tests have been completed
V(B)	✓				-	This is a redundant condition. Director's authority is provided through rules in the AAC. This permit condition does not serve any purpose
V(C)	✓				-	Tests have been completed

VII. PERIODIC MONITORING

A. Affected Facilities Subject to Standards of Performance for Existing Nonferrous Metals Industry Sources [AZSIP R9-3-521] ***(Emission units identified as "Existing" in Column 8, Table 1 of Attachment "D" of this permit)***

These units are subject to the 40% opacity standard under A.A.C. R18-2-702 and the particulate matter standard under A.A.C. R9-3-521.

For the purposes of periodic monitoring of particulate matter emissions, the permittee is required to install, calibrate, maintain, and operate monitoring devices for continuous measurement of the change in pressure of the gas stream through the scrubber and the scrubbing liquid flow rate to the scrubber.

B. Affected Facilities Subject to New Source Performance Standards for Metallic Mineral Processing Plants [40 CFR Part 60, Subpart LL] ***(Emission units identified as "New" in Column 8, Table 1 of Attachment "D" of this permit)***

These units are subject to the stack opacity standard of 7% (unless controlled by a wet scrubbing emission control device) under 40 CFR 60.382(a)(2), the fugitive opacity standard of 10% under 40 CFR 60.382(b), and the particulate matter standard of 0.05 grams per dry standard cubic meter under 40 CFR 60.382(a)(1).

For the purposes of periodic monitoring of particulate matter emissions, the permittee is required to install, calibrate, maintain, and operate monitoring devices for continuous measurement of the change in pressure of the gas stream through the scrubber and the scrubbing liquid flow rate to the scrubber. For the purposes of periodic monitoring of opacity of fugitive emissions, the permittee is required to adopt a bi-weekly visual survey of visible emissions against the applicable fugitive opacity standard of 10%.

In addition, the permittee is required to maintain and operate the air pollution control equipment in accordance with the manufacturer's specification. Permittee is also required to hold these specifications on file. Emissions related maintenance work performed on the air pollution control equipment and/or the process equipment needs to be recorded.

C. Non-Point Sources

Non-point sources are subject to the 40% opacity standard and other Article 6 requirements. Periodic monitoring for opacity standard entails a bi-weekly visible emissions survey in accordance with an ADEQ - approved observation plan, by a certified Method 9 observer. If the visible emissions survey indicates that a Method 9 reading may be required, the observer shall do so, and maintain records of the results. Any observed exceedance of the opacity standard should be reported appropriately.

Article 6 regulations also contain applicable requirements for non-point source emissions. These regulations require the Permittee to employ various control methods to suppress particulate emissions. Paragraph IV(A)(2) lists the various methods of dust suppression that may be used. By <u>not restricting</u> the Permittee to use <u>only one</u> of the methods, the permit provides the flexibility required to facilitate employment of effective control measures. Periodic monitoring data for these applicable requirements is generated in two ways by this permit :

(i) the bi-weekly visual opacity observations conducted as monitoring for the 40% opacity standard will provide data that can be used to investigate the level of particulate emissions from non-point sources during a compliance timeframe.

(ii) the Permittee is required to maintain a record of the kind of control measures that were employed to suppress particulate emissions. This periodic monitoring requirement is specified in Paragraph IV(B)(1) of Attachment B of the permit. In recognition of the fact that this requirement may sometimes be highly paper-intensive and result in reduced flexibility of operations, the permit provides an alternative in Paragraph IV(B)(2). Condition Paragraph IV(B)(2) states that the Permittee may maintain a Non-Point Source Monitoring Plan that serves as a record of the control measures that were employed by the Permittee to mitigate dust emissions from non-point sources. To satisfy its function as a monitoring tool, the Non-Point Source Monitoring Plan should contain some minimum elements of information such as :

(1) Types of control measures employed on an activity-specific basis;
(2) Frequency of application of control measures;
(3) A system for logging variations from the strategy outlined in the Non-Pont Source Monitoring Plan

The Non-Point Source Monitoring Plan has to be submitted as part of the initial application, and will undergo public and EPA review along with the rest of the permit. If the Permittee fails to submit the Non-Point Source Monitoring Plan along with the initial application, the Permittee will be require to comply with the monitoring requirements of Paragraph IV(B)(1), till such time that a significant revision is processed to allow the Permittee to avail of Paragraph IV(B)(2). As part of the significant revision procedures, the Non-Point Source Monitoring Plan will undergo public and EPA review.

It should be noted that the Non-Point Source Monitoring Plan is a monitoring tool. The Permittee is required to use one of the methods outlined in Paragraph IV(A)(2) of the permit, and to maintain a record of the method that was used. Additions to methods listed in the original Non-Point Source Monitoring Plan may or may not require prior approval, as discussed in the following :

If the new method is already listed in Paragraph IV(A)(2), then prior approval from the Director is not required, as stated by Sub-Paragraph IV(B)(2)(c). The Director will however, have to be notified of such changes. These notifications will have to be recorded in the Non-Point Source Monitoring Plan by the Permittee, and will also be added to the copy of the Non-Point Source Monitoring Plan that is maintained at ADEQ.

If the Permittee desires to use a method that is not on the list in Paragraph IV(A)(2), prior approval for usage of this mechanism has to be obtained from the Director by relying on the appropriate permit revision mechanism. Once approval is granted, the Permittee can initiate usage of the product, and record its usage in the Non-Point Source Monitoring Plan.

D. Lime Silo Baghouse

The Permittee is required to establish a baseline opacity level at the exit of the lime silo baghouse under normal representative operating conditions. The baseline opacity level should be reported to the Director within 30 days of establishing it. The Permittee also has the flexibility of re-establishing the baseline after it is set initally. The Director

has to recieve a notifiaction within 30 days after the baseline is re-established. The report has to contain the new baseline value, along with the reason for re-establishing the level. The Permittee is required to make a bi-weekly survey of the visible emissions from the emission unit. The Permittee is required to create a record of the date on which the survey was taken, the name of the observer, and the results of the survey. If the visible emissions do not appear to exceed the baseline opacity level, the Permittee would note in the record that the visible emissions were below the baseline opacity, and that it did not require a Method 9 to be performed.

If the Permittee finds that on an instantaneous basis the visible emissions are in excess of the baseline opacity level but are below the opacity standard, then he is required to make a six-minute Method 9 observation. If this observation indicates opacity in excess of the baseline opacity level but is below the opacity standard then the Permittee is required to adjust or repair the controls or the equipment to bring the opacity below the baseline level.

If the six-minute reading indicates that the opacity is above both the baseline level and the opacity standard then the Permittee is required to adjust the process equipment or process control equipment to bring the opacity below the baseline level. In addition, the Permittee shall report it as excess emissions.

If the Permittee finds that the visible emissions are less than the baseline opacity, then the Permittee is required to record the source of emission, date, time, and result of the test.

The Permittee may re-establish the baseline opacity level. The new baseline opacity level and the reason for re-establishing the baseline should be reported to the Director within 30 days of such an action.

ADEQ believes that the bi-weekly visual survey approach identified in the preceding paragraphs reasonably assures compliance with the opacity and particulate matter standards. Although no data is available to directly correlate opacity to particulate matter emissions, doing so would at least indicate potential problems with the air pollution control device. If corrective actions are taken to rectify the problems associated with the pollution control device, then compliance can be inferred on the basis that the source operates its pollution control equipment in a manner consistent with good air pollution control practices. Opacity above the baseline level but less than 40% does not hold the source in violation of the particulate matter standard, but merely requires the source to identify and alleviate the problem by taking corrective actions to reduce the opacity to less than the baseline level. However, not taking corrective actions could potentially hold the source in violation of permit terms.

VIII. TESTING REQUIREMENTS

Permittee is required to perform an annual performance test on each scrubber stack that is not subject to NSPS. This performance test supplements the bi-weekly visual observation plan for periodic monitoring purposes. For NSPS stacks, performance tests are required once during the course of the permit term. The results of the tests will be used to recalibrate the monitoring gauges installed on the scrubbers.

IX. INSIGNIFICANT ACTIVITIES

The applicant has requested the following activities to be deemed “insignificant”. According to A.A.C. R18-1-101(54), for an activity to be deemed “insignificant”, there should be no applicable requirement for the activity. This was the basis used to determine if the activities in the following list qualify as an “insignificant” activity under Arizona law.

S. No.	INSIGNIFICANT ACTIVITY	Yes/No	Reason
1	Stationary rotating machinery of less than or equal to 325 aggregate brake horsepower	No	AACR18-2-719
2	Internal Combustion (IC) engine driven compressors, IC engine driven electrical generator sets and IC engine driven water pumps used only for emergency replacement or standby service	No	AACR18-2-719
3	Fuel burning equipment which in the aggregate is rated at less than 500,000 British thermal units per hour	No	AACR18-2-724 (see #4, #5)
4	Size: 14 water heaters with rated capacities ranging from 28,000 to 75,000 BTU per hour. These are approximately the size of residential water heaters, are fired with natural gas and would be expected to have minimal emissions. There is 1 natural gas boiler located at the changehouse rated at 300,000 BTU per hour. There are 2 forges in the shop that are estimated to be rated at less than 300,000 BTU per hour. There are approximately 18 natural gas space heaters which are rated at 160,000 BTU per hour.	No	AACR18-2-724 (see #3, #5)
5	Truck wash burner rated 362,000 BTU per hour	No	AACR18-2-724 (see #3, #4)
6	Noncommercial (in-house) experimental, analytical laboratory equipment which is bench scale in nature including quality control/quality assurance laboratories supporting a smelter facility, and research and development laboratories	Yes	AACR18-2-101(54)(j)
7	Small pilot scale research and development projects. These are to be evaluated on a case-by-case basis considering size, nature and amount of emissions, and duration of project	Yes	AACR18-2-101(54)(j)
8	Lab equipment used for chemical and physical analysis	Yes	AACR18-2-101(54)(j)
9	#12 - #15 Alcohol Tanks (8400 gal)-Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
10	#16, #17 Caustic Soda Tanks (6300 gal) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
11	#18 Pine oil Tank (6300 gal) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
12	Warehouse LPG Tank (325 gal) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
13	Diesel/Fuel Oil Storage Tank at Truck Shop (1000 gal) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
14	Diesel/Fuel Oil Storage Tank above filter plant (25000 gal) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
15	Lubricating Oil Storage Tank at Secondary Crusher (25000 gal) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
16	Used Oil Tanks at Truck Shop, Drum Yard and Secondary Crusher (1000 gal ea) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
17	Two Unleaded Gasoline Storage Tanks at Truck Shop (10310 gal) - Not subject to CAA Sec 112(r)	Yes	AACR18-2-101(54)(j)
18	Piping and storage systems for natural gas, propane, and liquefied petroleum gas	Yes	AACR18-2-101(54)(j)
19	Piping of fuel oils, used oil and transformer oil	Yes	AACR18-2-101(54)(j)

S. No.	INSIGNIFICANT ACTIVITY	Yes/No	Reason
20	Storage and handling of drums or other transportable containers where the containers are sealed during storage, and covered during loading and unloading (includes containers of RCRA waste and used oil)	Yes	AACR18-2-101(54)(j)
21	Storage tanks of any size containing exclusively soaps, detergents, waxes, greases, aqueous salt solutions, aqueous acid solutions	Yes	AACR18-2-101(54)(j)
22	Waste oil collection	Yes	AACR18-2-101(54)(j)
23	Water treatment or storage or cooling systems for process liquids and gases containing no chromium water treatment compounds	Yes	AACR18-2-101(54)(j)
24	Chemical storage associated with water and wastewater treatment where the water is treated for consumption and/or use within the permitted facility	Yes	AACR18-2-101(54)(j)